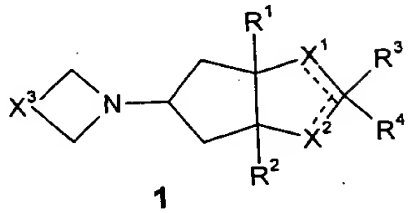
CLAIMS

1. A compound of the formula



1

or a pharmaceutically acceptable salt or solvate thereof wherein:

each dashed line in the above formula represents an optional double bond, provided both dashed lines do not simultaneously represent a double bond;

X^1 and X^2 are each independently selected from O and $-(CH_2)_j-$ wherein j is 1 or 2, provided that no O is doubly-bonded to an adjacent atom;

X^3 is $-CH(R^5)N(R^8)CH(R^6)-$, $-CH(R^5)C(R^8)(R^9)CH(R^6)-$, $-C(R^5)=C(R^8)CH(R^6)-$, or $-CH(R^5)C(R^8)=C(R^6)-$;

R^1 and R^2 are each independently H, hydroxy, or C_1-C_6 alkyl;

or R^1 and R^2 are taken together as a bond;

each R^3 is independently selected from $-S(O)_jR^7$ wherein j is an integer ranging from 0 to 2, $-C(O)R^7$, $-OR^7$, $-NC(O)R^7$, $-NR^7R^{12}$, and the substituents provided in the definition of R^7 other than H;

R^4 is absent where the dashed line in the above formula 1 represents a double bond or R^4 is selected from H and the substituents provided in the definition of R^3;

or R^3 and R^4 are taken together with the carbon atom to which each is attached to form a 5-10 membered mono-cyclic or bicyclic group wherein said cyclic group may be carbocyclic or heterocyclic with 1 to 3 heteroatoms selected from O, S, and $-N(R^{11})-$ with the proviso that two O atoms, two S atoms, or an O and S atom are not attached directly to each other; said cyclic group is saturated or partially unsaturated; aromatic or non-aromatic; 1 or 2 of the carbon atoms in said cyclic group optionally may be replaced by an oxo -C(O)- moiety; and said cyclic group is optionally substituted by 1 to 3 R^{10} groups;

R^5 and R^6 are each independently selected from H and C_1-C_4 alkyl;

or R^5 and R^6 are taken together as $-(CH_2)_q-$ wherein q is 2 or 3;

or R^5 or R^6 is taken together with R^8 as defined below;

each R^7 is independently selected from H, $-(CH_2)_t(C_6$-C_{10} aryl) and $-(CH_2)_t$(4-10 membered heterocyclic), wherein t is an integer ranging from 0 to 5; 1 or 2 of the carbon atoms of said heterocyclic group optionally may be replaced with an oxo -C(O)- group; said aryl and heterocyclic R^7 groups are optionally fused to a benzen ring, a C_5-C_8 saturat d cyclic group, or a 4-10 membered heterocyclic group; the $-(CH_2)_t-$ moieties of the foregoing R^7

groups optionally include a carbon-carbon double or triple bond where t is an integer between 2 and 5; and the foregoing R^7 groups, except H, are optionally substituted by 1 to 5 R^{10} groups;

R^8 is selected from the substituents provided in the definition of R^7 other than H;

R^9 is selected from the substituents provided in the definition of R^7;

or R^8 and R^9 are taken together with the carbon to which each is attached to form a 5-10 membered mono-cyclic or bicyclic group wherein said cyclic group is carbocyclic or heterocyclic with 1 to 3 heteroatoms selected from O, S, and -N(R^{11})- with the proviso that two O atoms, two S atoms, or an O and S atom are not attached directly to each other; saturated or partially unsaturated; aromatic or non-aromatic; 1 or 2 of the carbon atoms in said cyclic group optionally may be replaced by an oxo -C(O)- moiety; and said cyclic group is optionally substituted by 1 to 3 R^{10} groups;

or R^8 taken together with either R^5 or R^6 and the separate carbon atoms to which each is attached to form a fused 5-10 membered mono-cyclic or bicyclic group wherein said cyclic group may be carbocyclic or heterocyclic with 1 to 3 heteroatoms selected from O, S, and -N(R^{11})- with the proviso that two O atoms, two S atoms, or an O and S atom are not attached directly to each other; saturated or partially unsaturated; aromatic or non-aromatic; 1 or 2 of the carbon atoms in said cyclic group optionally may be replaced by an oxo -C(O)- moiety; and said cyclic group is optionally substituted by 1 to 3 R^{10} groups;

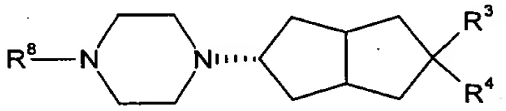
each R^{10} is independently selected from C_1-C_{10} alkyl, C_2-C_{10} alkenyl, C_2-C_{10} alkynyl, halo, cyano, nitro, trifluoromethyl, trifluoromethoxy, azido, -OR^{11}, -$C(O)R^{11}$, -$C(O)OR^{11}$, -$NR^{12}C(O)OR^{11}$, -$OC(O)R^{11}$, -$NR^{12}SO_2R^{11}$, -$SO_2NR^{11}R^{12}$, -$NR^{12}C(O)R^{11}$, -$C(O)NR^{11}R^{12}$, -$NR^{11}R^{12}$, -$S(O)_j$(C_1-C_6 alkyl) wherein j is an integer ranging from 0 to 2, -$(CH_2)_m$(C_6-C_{10} aryl), -$SO_2(CH_2)_m$(C_6-C_{10} aryl), -$S(CH_2)_m$(C_6-C_{10} aryl), -$O(CH_2)_m$(C_6-C_{10} aryl) and -$(CH_2)_m$(4-10 membered heterocyclic), wherein m is an integer ranging from 0 to 4; said C_1-C_{10} alkyl group optionally contains 1 or 2 hetero moieties selected from O, S and -N(R^{12})- with the proviso that two O atoms, two S atoms, or an O and S atom are not attached directly to each other; said aryl and heterocyclic R^{10} groups are optionally fused to a C_6-C_{10} aryl group, a C_5-C_8 saturated cyclic group, or a 4-10 membered heterocyclic group; and said alkyl, aryl and heterocyclic R^{10} groups are optionally substituted by 1 to 3 substituents independently selected from halo, cyano, nitro, trifluoromethyl, trifluoromethoxy, azido, -$NR^{12}SO_2R^{11}$, -$SO_2NR^{11}R^{12}$, -$C(O)R^{11}$, -$C(O)OR^{11}$, -$OC(O)R^{11}$, -$NR^{12}C(O)R^{11}$, -$C(O)NR^{11}R^{12}$, -$NR^{11}R^{12}$, C_1-C_6 alkyl, -OR^{11} and the substituents listed in the definition of R^{11};

each R^{11} is independently selected from H, C_1-C_{10} alkyl, -$(CH_2)_m$(C_6-C_{10} aryl), and -$(CH_2)_m$(4-10 membered heterocyclic), wherein m is an integer ranging from 0 to 4; said alkyl group optionally includes 1 or 2 hetero moieties selected from O, S and -N(R^{12})- with the

proviso that two O atoms, two S atoms, or an O and S atom are not attached directly to each other; said aryl and heterocyclic R^{11} groups are optionally fused to a C_6-C_{10} aryl group, a C_5-C_8 saturated cyclic group, or a 4-10 membered heterocyclic group; and the foregoing R^{11} subsituents, except H, are optionally substituted by 1 to 3 substituents independently selected from halo, cyano, nitro, trifluoromethyl, trifluoromethoxy, azido, $-C(O)R^{12}$, $-C(O)OR^{12}$, $-CO(O)R^{12}$, $-NR^{12}C(O)R^{13}$, $-C(O)NR^{12}R^{13}$, $-NR^{12}R^{13}$, hydroxy, C_1-C_6 alkyl, and C_1-C_6 alkoxy; and,

each R^{12} and R^{13} is independently H or C_1-C_6 alkyl.

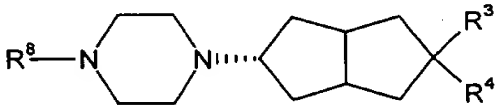
2. A compound according to claim 1 wherein said formula 1 has the following structure



wherein R^3 is $-(CH_2)_t(C_6$-C_{10} aryl) or $-(CH_2)_t$(4-10 membered heterocyclic), R^4 is H or hydroxy, and R^8 is $-(CH_2)_t(C_6$-C_{10} aryl) or $-(CH_2)_t$(4-10 membered heterocyclic), t is an integer ranging from 0 to 5, the foregoing R^3 and R^8 heterocyclic groups are optionally fused to a benzene ring, and said R^3 and R^8 groups are optionally substituted by 1 to 3 R^{10} groups.

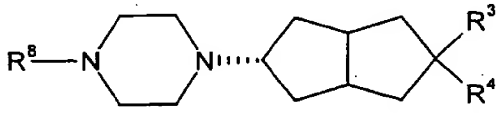
3. A compound according to claim 2 wherein R^3 is a heterocyclic group fused to a benzene ring and, optionally, 1 or 2 of the carbon atoms of said heterocyclic group are replaced with an oxo -C(O)- group.

4. A compound according to claim 1 wherein said formula 1 has the following structure



wherein R^3 is $-O(CH_2)_t(C_6$-C_{10} aryl) or $-O(CH_2)_t$(4-10 membered heterocyclic), R^4 is H or hydroxy, and R^8 is $-(CH_2)_t(C_6$-C_{10} aryl) or $-(CH_2)_t$(4-10 membered heterocyclic), t is an integer ranging from 0 to 5, and the foregoing R^3 and R^8 groups are optionally substituted by 1 to 3 R^{10} groups.

5. A compound according to claim 1 wherein said formula 1 has the following structure



wherein R^3 and R^4 are taken together with the carbon atom to which each is attached to form a 5-10 membered mono-cyclic or bicyclic group wherein said cyclic group may be

carbocyclic or heterocyclic with 1 to 3 heteroatoms selected from O, S, and -N(R^{11})- with the proviso that two O atoms, two S atoms, or an O and S atom are not attached directly to each other; said cyclic group is saturated or partially unsaturated; aromatic or non-aromatic; 1 or 2 of the carbon atoms in said cyclic group optionally may be replaced by an oxo -C(O)- moiety; and said cyclic group is optionally substituted by 1 to 3 R^{10} groups; and R^8 is -$(CH_2)_t$(C_6-C_{10} aryl) or -$(CH_2)_t$(4-10 membered heterocyclic), wherein t is an integer ranging from 0 to 5 and said R^8, R^3 and R^4 groups are optionally substituted by 1 to 3 R^{10} groups.

6. A compound according to claim 1 selected from the group consisting of

(2'α,3'aβ,5'α,6'aβ)-5'-[4-(4-Fluoro-phenyl)-piperazin-1-yl]-hexahydropentalene-2'-one;

(2'α,3'aβ,5'α,6'aβ)-5'-[4-(4-Fluoro-phenyl)-piperazin-1-yl]-2'-phenyl-octahydro-pentalen-2'ol, maleate salt;

(2'α,3'aβ,5'α,6'aβ)-5'-[4-(4-Cyano-3-fluoro-phenyl)-piperazin-1-yl]-hexahydropentalene-2-one, ethylene ketal;

(2'α,3'aβ,5'α,6'aβ)-5'-[4-(4-Cyano-3-fluoro-phenyl)-piperazin-1-yl]-hexahydropentalene-2-one;

(2'α,3'aβ, 5'α, 6'aβ)-2-Fluoro-4-[4-(5'-hydroxy-5'-phenyl-octahydro-pentalen-2'-yl)-pipeerazin-1-yl]-benzonitrile, maleate salt;

(2α,3aβ,5α,6aβ)-5-Hydroxy-5-phenyl-hexahydro-pentalen-2-one;

(2'α,3'aβ,5'α,6'aβ)-5'-[4-(2-Methoxy-phenyl)-piperazin-1-yl]-2'-phenyl-octahydro-pentalen-2'ol, maleate salt;

(2'α,3'aβ,5'α,6'aβ)-5'-[4-(4-Fluoro-1-pyrimidyl)-piperazin-1-yl]-2'-(4-fluoro-phenyl)-octahydro-pentalen-2'ol, maleate salt;

(2'α,3'aβ,5'α,6'aβ)-5'-[4-(4-Cyano-3-fluoro-phenyl)-piperazin-1-yl]-2'-(4-fluoro-phenyl)-octahydro-pentalen-2'ol, maleate salt;

(2'α,3'aβ,5'α,6'aβ)-5'-[4-(4-Fluoro-phenyl)-piperazin-1-yl]-2'-(4-fluoro-phenyl)-octahydro-pentalen-2'ol, maleate salt;

(2'α, 3'aβ, 6'aβ)-1-(4-Fluoro-phenyl)-4-(5'-phenyl-1',2',3',3'a,4',6'a-hexahydro-pentalen-2'-yl)-piperazine dihydrochloride;

(2'α, 3'aβ, 6'aβ)-5-Fluoro-2-[4-(5'-phenyl-1',2',3',3'a,4',6'a-hexahydro-pentalen-2'-yl)-piperazin-1-yl]-pyrimidine maleate;

(2'α,3'aβ,6'aβ)-2-Fluoro-4-[4-(5'-phenyl-1',2',3',3'a,4',6'a-hexahydro-pentalen-2'-yl)-piperazin-1-yl]-benzonitrile, maleate;

(2'α, 3'aβ, 6'aβ)-2-Fluoro-4-{4-[5-(2-methoxy-phenyl)-1',2',3',3'a,4',6'a-hexahydro-pentalen-2'-yl]-piperazin-1-yl}-benzonitrile, maleate;

(2'α, 3'aβ, 6'aβ)-1-Phenyl-4-(5'-phenyl-1',2',3',3'a,4',6'a-hexahydro-pentalen-2'-yl)-piperazine, dimaleate;

(2'α, 3'aβ, 5'α, 6'aβ)-1-(4-Fluoro-phenyl)-4-(5'-phenyl-octahydro-pentalen-2'-yl)-piperazine, dihydrochloride;

(2'α, 3'aβ, 5'α, 6'aβ)-5-Fluoro-2-[4-(5'-phenyl-octahydro-pentalen-2'-yl)-piperazin-1-yl]-pyrimidine, maleate;

(2'α, 3'aβ, 5'α, 6'aβ)-2-Fluoro-4-[4-(5'-phenyl-octahydro-pentalen-2'-yl)-piperazin-1-yl]-benzonitrile, maleate;

(2'α, 3'aβ, 5'α, 6'aβ)-1-Phenyl-4-(5'-phenyl-octahydro-pentalen-2'-yl)-piperazine, maleate;

(2'α,3'aβ,5'α,6'aβ)-5'-Hydroxy-5'-(2-trifluoromethyl-phenyl)-hexahydro-pentalen-2'-one;

(2'α,3'aβ,6'aβ)-5'-(2-trifluoromethyl-phenyl)-3,3a,4,6a-tetrahydro-1H-pentalen-2'-one, ethylene ketal;

(2'α,3'aβ,5'α,6'aβ)-5'-(2-Trifluoromethyl-phenyl)-hexahydro-1H-pentalen-2'-one, ethylene ketal;

(2'α,3'aβ,5'α,6'aβ)-5'-(2-Trifluoromethyl-phenyl)-hexahydro-1H-pentalen-2'-one;

(2'α, 3'aβ, 5'α, 6'aβ)-2-Fluoro-4-{4-[5'-(2-trifluoromethyl-phenyl)-octahydro-pentalen-2'-yl]-piperazin-1-yl}-benzonitrile, maleate;

(2'α, 3'aβ, 5'α, 6'aβ)-2-Fluoro-4-{4-[5'-(2-methoxy-phenyl)-octahydro-pentalen-2'-yl]-piperazin-1-yl}-benzonitrile, maleate;

(2'α, 3'aβ, 5'α, 6'aβ)-5-Fluoro-2-{4-[5'-(2-methoxy-phenyl)-octahydro-pentalen-2'-yl]-piperazin-1-yl}-pyrimidine, maleate;

(2'α, 3'aβ, 5'α, 6'aβ)-2-Fluoro-4-{4-[5'-(3-methoxy-phenyl)-octahydro-pentalen-2'-yl]-piperazin-1-yl}-benzonitrile, maleate;

(2'α, 3'aβ, 5'α, 6'aβ)-2-Fluoro-4-{4-[5'-(4-methoxy-phenyl)-octahydro-pentalen-2'-yl]-piperazin-1-yl}-benzonitrile, maleate;

(2'α, 3'aβ, 5'α, 6'aβ)-2-Fluoro-4-[4-(5'-o-tolyl-octahydro-pentalen-2'-yl)-piperazin-1-yl]-benzonitrile, maleate;

(2'α, 3'aβ, 5'α, 6'aβ)-5-Fluoro-2-[4-(5'-o-tolyl-octahydro-pentalen-2'-yl)-piperazin-1-yl]-pyrimidine, maleate;

(2'α, 3'aβ, 5'α, 6'aβ)-5-Chloro-2-{4-[5'-(2-methoxy-phenyl)-octahydro-pentalen-2'-yl]-piperazin-1-yl}-pyrimidine, maleate;

(2'α, 3'aβ, 5'α, 6'aβ)-5-Chloro-2-[4-(5'-o-tolyl-octahydro-pentalen-2'-yl)-piperazin-1-yl]-pyrimidine, maleate;

(2'α, 3'aβ, 5'α, 6'aβ)-2-Fluoro-4-{4-[5'-(2-methanesulfonyl-phenyl)-octahydro-pentalen-2'-yl]-piperazin-1-yl}-benzonitrile, maleate;

(2'α, 3'aβ, 5'α, 6'aβ)-1-Phenyl-4-[5'-(3-pyrrolidin-1-ylmethyl-phenyl)-octahydro-pentalen-2'-yl]-piperazine, dimaleate;

5-Trimethylstannayl-3,3a,4,6a-tetrahydro-1H-pentalen-2-one, ethylene ketal;

5-(2-Cyano-phenyl)-3,3a,4,6a-tetrahydro-1H-pentalen-2-one;

(2'α, 3'aβ, 5'α, 6'aβ)-2-Cyano-4-{4-[5'-(2-fluoro-phenyl)-octahydro-pentalen-2'-yl]-piperazin-1-yl}-benzonitrile, maleate;

(2'α, 3'aβ, 5'α, 6'aβ)-2-Fluoro-4-{4-[5'-(2-trifluoromethoxy-phenyl)-octahydro-pentalen-2'-yl]-piperazin-1-yl}-benzonitrile, maleate;

(2'α, 3'aβ, 5'α, 6'aβ)-2-Fluoro-4-{4-[5'-(2-fluoro-phenyl)-octahydro-pentalen-2'-yl]-piperazin-1-yl}-benzonitrile, maleate;

(2'α, 3'aβ, 5'α, 6'aβ)-2-Fluoro-4-[4-(5'-pyridin-2-yl-octahydro-pentalen-2'-yl)-piperazin-1-yl]-benzonitrile, dihydrochloride;

(2'α, 3'aβ, 5'α, 6'aβ)-2-Fluoro-4-[4-(5'-m-tolyl-octahydro-pentalen-2'-yl)-piperazin-1-yl]-benzonitrile, maleate;

(2'α, 3'aβ, 5'α, 6'aβ)-2-Fluoro-4-[4-(5'-p-tolyl-octahydro-pentalen-2'-yl)-piperazin-1-yl]-benzonitrile, maleate;

(2'α, 3'aβ, 5'α, 6'aβ)-N-(2-{5'-[4-(5-Fluoro-pyrimidin-2-yl)-piperazin-1-yl]-octahydro-pentalen-2'-yl}-phenyl)-acetamide, maleate;

(2'α, 3'aβ, 5'α, 6'aβ)-N-(2-{5'-[4-(4-Cyano-3-fluoro-phenyl)-piperazin-1yl]-octahydro-pentalen-2'-yl}-phenyl)-acetamide, maleate;

5-(2-Cyano-phenyl)-3,3a,4,6a-tetrahydro-1H-pentalen-2-one, ethylene ketal;

2-(5-Oxo-octahydro-pentalen-2-yl)-benzamide, ethylene ketal;

(2'α, 3'aβ, 5'α, 6'aβ)-2-{5'-[4-(4-Cyano-3-fluoro-phenyl)-piperazin-1-yl]-octahydro-pentalen-2'-yl}-benzamide, maleate;

(2'α, 3'aβ, 5'α, 6'aβ)-2-Fluoro-4-[4-(3', 3'a, 4', 5', 6', 6'a-hexahydrospiro[isobenzofuran-1(3H), 2'(1'H)-pentalen]-5'-yl)-1-piperazinyl]-benzonitrile, maleate;

(2'α, 3'aβ, 5'β, 6'aβ)-2-Fluoro-4-[4-(3', 3'a, 4', 5', 6', 6'a-hexahydrospiro[isobenzofuran-1(3H), 2'(1'H)-pentalen]-5'-yl)-1-piperazinyl]-benzonitrile, maleate;

(2'α, 3'aβ, 5'α, 6'aβ)-5-Fluoro-2-[4-(3', 3'a, 4', 5', 6', 6'a-hexahydrospiro[isobenzofuran-1(3H), 2'(1'H)-pentalen]-5'-yl)-piperazin-1-yl]-pyrimidine;

(2'β, 3'aβ, 5'α, 6'aβ)-5-Fluoro-2-[4-(3', 3'a, 4', 5', 6', 6'a-hexahydrospiro[isobenzofuran-1(3H), 2'(1'H)-pentalen]-5'-yl)-piperazin-1-yl]-pyrimidine;

(2'α, 3'aβ, 5'α, 6'aβ)-5-Fluoro-2-[4-(3', 3'a, 4', 5', 6', 6'a-hexahydro-3'a,6'a-dimethylspiro[isobenzofuran-1(3H), 2'(1'H)-pentalen]-5'-yl)-1-piperazinyl]-pyrimidine, maleate;

(2'β, 3'aβ, 5'α, 6'aβ)-5-Fluoro-2-[4-(3', 3'a, 4', 5', 6', 6'a-hexahydro-3'a,6'a-dimethylspiro[isobenzofuran-1(3H), 2'(1'H)-pentalen]-5'-yl)-1-piperazinyl]-pyrimidine, maleate;

(2'α, 3'aβ, 5'α, 6'aβ)-2-Fluoro-4-[4-(3, 3', 3'a, 4, 4', 5', 6', 6'a-hexahydrospiro[2H-1-benzopyran-2,2'(1'H)-pentalen]-5'-yl)-1-piperazinyl]-benzonitrile, maleate;

(2'α, 3'aβ, 5'β, 6'aβ)-2-Fluoro-4-[4-(3, 3', 3'a, 4, 4', 5', 6', 6'a-hexahydrospiro[2H-1-benzopyran-2,2'(1'H)-pentalen]- 5'-yl)-1-piperazinyl]-benzonitrile, maleate;

(2'α, 3'aβ, 5'α, 6'aβ)-1-Phenyl-4-(3, 3', 3'a, 4, 4', 5', 6', 6'a-hexahydrospiro[2H-1-benzopyran-2,2'(1'H)-pentalen]-5'-yl]-5'-yl)-piperazine, maleate;

(2'β, 3'aβ, 5'α, 6'aβ)-1-Phenyl-4-(3, 3', 3'a, 4, 4', 5', 6', 6'a-hexahydrospiro[2H-1-benzopyran-2,2'(1'H)-pentalen]-5'-yl]-5'-yl)-piperazine, maleate;

(2'α, 3'aβ, 5'α, 6'aβ)-2-Fluoro-4-[4-(3, 3', 3'a, 4, 4', 5', 6', 6'a-hexahydrospiro[2H-6-fluoro-1-benzopyran-2,2'(1'H)-pentalen]-5'-yl]-5'-yl)-1-piperazinyl]-benzonitrile, maleate;

(2'β, 3'aβ, 5'α, 6'aβ)-2-Fluoro-4-[4-(3, 3', 3'a, 4, 4', 5', 6', 6'a-hexahydrospiro[2H-6-fluoro-1-benzopyran-2,2'(1'H)-pentalen]-5'-yl]-5'-yl)-1-piperazinyl]-benzonitrile, maleate;

(2α,3aβ,5α,6aβ)-5-Benzylamino-hexahydropentalen-2-one, mono -ethylene ketal;

(2α,3aβ,5α,6aβ)-5-Amino-hexahydropentalen-2-one, mono -ethylene ketal;

(2α,3aβ,5α,6aβ)-5-(5-Fluoro-2-nitro-phenylamino)-hexahydropentalen-2-one, mono -ethylene ketal;

(2α,3aβ,5α,6aβ)-5-(2-Amino-5-fluoro-phenylamino)-hexahydropentalen-2-one, mono -ethylene ketal;

(2'α, 3'aβ, 5'α, 6'aβ)-2-Fluoro-4-{4-[5'-(6-fluoro-2-oxo-2,3-dihydro-benzoimidazol-1-yl)-octahydro-pentalen-2'-yl]-piperazin-1-yl}-benzonitrile, dimesylate;

(2'α, 3'aβ, 5'α, 6'aβ)-2-Fluoro-4-{4-[5'-(2-oxo-2,3-dihydro-benzoimidazol-1-yl)-octahydro-pentalen-2'-yl]-piperazin-1-yl}-benzonitrile, mesylate;

(2'α, 3'aβ, 5'α, 6'aβ)-1-{5'-[4-(5-Fluoro-pyrimidin-2-yl)-piperazin-1-yl]-octahydro-pentalen-2'-yl}-1,3-dihydro-benzoimidazol-2-one, mesylate;

(2α,3aβ,5α,6aβ)-5-(6-Fluoro-2-methyl-benzoimidazol-1-yl)-hexahydro-pentalen-2-one;

(2'α, 3'aβ, 5'α, 6'aβ)-2-Fluoro-4-{4-[5'-(6-fluoro-2-methylbenzoimidazol-1-yl)-octahydro-pentalen-2'-yl]-piperazin-1-yl}-benzonitrile, dimesylate;

(2'α, 3'aβ, 5'α, 6'aβ)-6-Fluoro-2-methyl-1-[5'-(4-phenyl-piperazin-1-yl)-octahydro-pentalen-2'-yl]-1H-benzoimidazole, dimaleate;

(2α,3aβ,6aβ)-5-(1H-Indol-3-yl)-3,3a,4,6a-tetrahydro-1H-pentalen-2-one, mono-ethylene ketal;

(2'α, 3'aβ, 5'α, 6'aβ)-2-Fluoro-4-{4-[5'-(1H-indol-3-yl)-octahydro-pentalen-2'-yl]-piperazin-1-yl}-benzonitrile, maleate;

(2'α, 3'aβ, 5'α, 6'aβ)-3-[5'-(4-Phenyl-piperazin-1-yl)-octahydro-pentalen-2'-yl]-1H-indole, maleate;

(2α,3aβ,6aβ)-5-(4-Fluoro-phenoxy)-hexahydro-pentalen-2-one;

(2'α, 3'aβ, 5'β, 6'aβ)-1-[5'-(4-Fluoro-phenoxy)-octahydro-pentalen-2'-yl]-4-phenyl-piperazine, maleate;

(2'α, 3'aβ, 5'β, 6'aβ)-2-Fluoro-4-{4-[5'-(4-fluoro-phenoxy)-octahydro-pentalen-2'-yl]-piperazin-1-yl}-benzonitrile, maleate;

(2'α, 3'aβ, 5'β, 6'aβ)-5-Fluoro-2-{4-[5'-(4-fluoro-phenoxy)-octahydro-pentalen-2'-yl]-piperazin-1-yl}-pyrimidine, maleate;

(2'β, 3'aβ, 5'β, 6'aβ)-1-[5'-(4-Fluoro-phenoxy)-octahydro-pentalen-2'-yl]-4-phenyl-piperazine, maleate;

(2'α, 3'aβ, 5'β, 6'aβ)-2-[5'-(4-Phenyl-piperazin-1-yl)-octahydro-pentalen-2'-yl]-isoindole-1,3-dione maleate;

(2'α,3'aβ,5'α,6'aβ)-5-Hydroxy-hexahydro-pentalen-2-one, ethylene ketal;

(2'α,3'aβ,5'α,6'aβ)-2-Oxo-3-(5-oxo-octahydro-pentalen-2-yl)-2,3-dihydro-benzoimidazole-1-carboxylic acid tert-butyl ester, ethylene ketal;

(2'α,3'aβ,5'α,6'aβ)-2-(5-oxo-octahydro-pentalen-2-yloxy)-3H-benzoimidazole-1-carboxylic acid tert-butyl ester, ethylene ketal;

(2'β, 3'aβ, 5'α, 6'aβ)-3-{5'-[4-(4-Fluoro-phenyl)-piperazin-1-yl]-octahydro-pentalen-2'-yl}-2-oxo-2,3-dihydro-benzoimidazole-1-carboxylic acid tert-butyl ester;

(2'β, 3'aβ, 5'α, 6'aβ)-1-{5'-[4-(4-Fluoro-phenyl)-piperazin-1-yl]-octahydro-pentalen-2'-yl}-1,3-dihydro-benzoimidazol-2-one, maleate;

(2'α, 3'aβ, 5'β, 6'aβ)-2-Fluoro-4-{4-[5'-(2-oxo-2,3-dihydro-benzoimidazol-1-yl)-octahydro-pentalen-2'-yl]-piperazin-1-yl}-benzonitrile, maleate;

(2'β, 3'aβ, 5'α, 6'aβ)-1-{5'-[4-(3,4-Difluoro-phenyl)-piperazin-1-yl]-octahydro-pentalen-2'-yl}-1,3-dihydro-benzoimidazol-2-one, maleate;

(2'β, 3'aβ, 5'α, 6'aβ)-2-[5'-(4-Phenyl-piperazin-1-yl)-octahydro-pentalen-2'-yloxy]-1H-benzoimidazole, maleate;

(2'α,3'aβ,5'α,6'aβ)-2-(5-Oxo-octahydro-pentalen-2-yl)-isoindole-1,3-dione;

(2'α, 3'aβ, 5'β, 6'aβ)-2-[5'-(4-Phenyl-piperazin-1-yl)-octahydro-pentalen-2'-yl]-isoindole-1,3-dione, maleate;

(2'α, 3'aβ, 5'β, 6'aβ)-4-{4-[5'-(1,3-Dioxo-1,3-dihydro-isoindol-2-yl)-octahydro-pentalen-2'-yl]-piperazin-1-yl}-2-fluoro-benzonitrile, maleate;

(2'α, 3'aβ, 5'β, 6'aβ)-2-{5'-[4-(5-Fluoro-pyrimidin-2-yl)-piperazin-1-yl]-octahydro-pentalen-2'-yl}-isoindole-1,3-dione, maleate;

(2'β, 3'aβ, 5'α, 6'aβ)-2-{5'-[4-(3,4-Difluoro-phenyl)-piperazin-1-yl]-octahydro-pentalen-2'-yl}-isoindole-1,3-dione, maleate;

(2'β, 3'aβ, 5'α, 6'aβ)-2-{5'-[4-(4-Fluoro-phenyl)-piperazin-1-yl]-octahydro-pentalen-2'-yl}-isoindole-1,3-dione, maleate; and,

(2'β, 3'aβ, 5'α, 6'aβ)-N-[5-(4-Phenyl-piperazin-1-yl)-octahydro-pentalen-2-yl]-benzamide, maleate.

7. A pharmaceutical composition for treating a condition selected from psychosis, affective psychosis, nonorganic psychosis, personality disorders, schizophrenic and schizoaffective disorders, bipolar disorders, dysphoric mania, Parkinson's disease, extrapyramidal side effects from neuroleptic agents, neuroleptic malignant syndrome, tardive dyskinesia, nausea, emesis, hyperdermia and amenorrhea in a mammal comprising an amount of a compound according to claim 1 that is effective in treating such condition, and a pharmaceutically acceptable carrier.

8. A method of treating a condition selected from psychosis, affective psychosis, nonorganic psychosis, personality disorders, schizophrenic and schizoaffective disorders, bipolar disorders, dysphoric mania, Parkinson's disease, extrapyramidal side effects from neuroleptic agents, neuroleptic malignant syndrome, tardive dyskinesia, nausea, emesis, hyperdermia and amenorrhea in a mammal comprising administering to said mammal an amount of a compound according to claim 1 that is effective in treating such condition.

9. A pharmaceutical composition for treating a condition selected from psychosis, affective psychosis, nonorganic psychosis, personality disorders, schizophrenic and schizoaffective disorders, bipolar disorders, dysphoric mania, Parkinson's disease, extrapyramidal side effects from neuroleptic agents, neuroleptic malignant syndrome, tardive dyskinesia, nausea, emesis, hyperdermia and amenorrhea in a mammal comprising a dopaminergic effective amount of a compound according to claim 1 and a pharmaceutically acceptable carrier.

10. A method of treating a condition selected from psychosis, affective psychosis, nonorganic psychosis, personality disorders, schizophrenic and schizoaffective disorders, bipolar disorders, dysphoric mania, Parkinson's disease, extrapyramidal side effects from neuroleptic agents, neuroleptic malignant syndrome, tardive dyskinesia, and nausea, emesis, hyperdermia and amenorrhea in a mammal comprising an administering to said mammal a dopaminergic effective amount of a compound according to claim 1.

11. A pharmaceutical composition for treating a disease or condition, the treatment of which can be effected or facilitated by altering dopamine mediated neurotransmission in a mammal comprising a dopaminergic effective amount of a compound according to claim 1 and a pharmaceutically acceptable carrier.

12. A method of treating a disease or condition, the treatment of which can be effected or facilitated by altering dopamine mediated neurotransmission in a mammal comprising administering to said mammal a dopaminergic effective amount of a compound according to claim 1.

13. A pharmaceutical composition according to claim 9, wherein the dopaminergic effective amount is a D4 receptor binding effective amount.

14. A pharmaceutical composition according to claim 11, wherein the dopaminergic effective amount is a D4 receptor binding effective amount.

15. A method according to claim 10, wherein the dopaminergic effective amount that is administered to said mammal is a D4 receptor binding effective amount.

16. A method according to claim 12, wherein the dopaminergic effective amount that is administered to said mammal is a D4 receptor binding effective amount.